MITSUBISHI ELECTRIC

Air-Conditioners Indispensable Optional Parts
BRANCH BOX

PAC-AK53BC
PAC-AK52BC
PAC-AK51BC
PAC-AK32BC
PAC-AK31BC

ONLY FOR R410A OUTDOOR UNIT

ONLY FOR INDOOR USE

HFC utilized
R410A

INSTALLATION MANUAL

FOR INSTALLER

For safe and correct use, please read this installation manual thoroughly before installing the air-conditioner

English

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This installation manual is only for the branch box installation. In installing the indoor units and outdoor units, refer to the installation manual attached to each unit.

1. Safety precautions

► Before installing the unit, make sure you read all the "Safety precautions".
► Please report to your supply authority or obtain their consent before connecting this equipment to the power supply system.

⚠ Warning:
Describes precautions that must be observed to prevent danger of injury or death to the user.

⚠ Caution:
Describes precautions that must be observed to prevent damage to the unit.

After installation work has been completed, explain the "Safety Precautions," use, and maintenance of the unit to the customer according to the information in the Operation Manual and perform the test run to ensure normal operation. Both the Installation Manual and Operation Manual must be given to the user for keeping. These manuals must be passed on to subsequent users.

⏚ : Indicates a part which must be grounded.

⚠ Warning:
Carefully read the labels affixed to the main unit.

⚠ Warning:
- **Ask a dealer or an authorized technician to install the unit.**
- **For installation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with refrigerant specified in the outdoor unit installation manual.**
- **The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.**
- **The unit must be securely installed on a structure that can sustain its weight.**
- **If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.**
- **Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.**
- **All electric work must be performed by a qualified technician according to local regulations and the instructions given in this manual.**
- **Use only specified cables for wiring.**
- **The terminal block cover panel of the unit must be firmly attached.**
- **Use only accessories authorized by Mitsubishi Electric and ask a dealer or an authorized technician to install them.**
- **The user should never attempt to repair the unit or transfer it to another location.**
- **After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.**
- **Be sure to connect the power supply cords and the connecting wires for the indoor units, outdoor units, and branch boxes directly to the units (no intermediate connections). Intermediate connections can lead to communication errors if water enters the cords or wires and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point. (If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cords and wires.)**

⚠ Caution:
- **Make sure that the refrigerant pipes are well insulated to prevent condensation. Incomplete insulation may cause condensation on the surface of pipes, wetting of the ceiling, floor and other important properties.**
- **Make sure that the drainage pipe is carried out correctly following this manual and that it is insulated in order to prevent condensation. Any deficiency caused by piping may result in water leakage, wetting of the ceiling, floor and other personal properties.**

2. Selecting a location for installation

*** The branch box is only for indoor use.**
Please attach the special optional cover (PAC-AK350CVR-E) to install the branch box in the outdoors.

- Ensure that the branch box is installed in a location which facilitates servicing and maintenance. (ensure that the required maintenance hole or service space is available).

- **Do not install near bedrooms. The sound of refrigerant flowing through the piping may sometimes be audible.**
- **Ensure that it is located where noise in operation will not be a problem. After power is supplied or after an operation stop for a while, a small clicking noise may be heard from the inside of the branch box. The electronic expansion valve is opening and closing. The unit is not faulty.**

- Determine the route of refrigerant piping, drain piping, and electrical wiring beforehand.
- Ensure that the location of the installation is such that the length of refrigerant piping is within the specified limits.
- Ensure that the unit is out of reach of children at least 1.8 m above the floor.

• Do not install in location that is hot or humid for long periods of time.

- Ensure that the branch box is installed above the ceiling of corridor, bath room, etc., where persons are not regularly there (Avoid installing at around center of the room.) for maintenance.
- Ensure that the location of the installation is such that the down-gradient of the drain piping is greater than 1/100.

*** Ensure that the unit is installed in a location able to support its weight.**

⚠ Warning:
Ensure that the unit is installed firmly in a location able to support its weight.
If the installation is of insufficient strength the unit may fall, resulting in injury.

3. Confirming supplied accessories

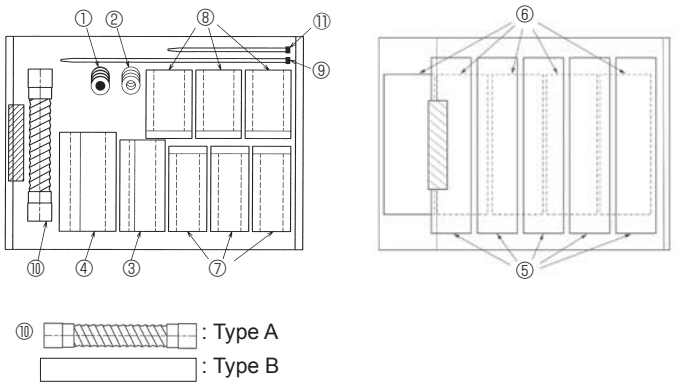


Fig. 3-1

3.1. Check the Branch Box accessories and parts

	Accessory name	Q'ty	
①	Washer (with insulation)	4	
②	Washer	4	

For refrigerant piping joint

	Accessory name	Q'ty	
③	Pipe cover (Liquid)	1	TO OUTDOOR UNIT
④	Pipe cover (Gas)	1	TO OUTDOOR UNIT
⑤	Pipe cover (Liquid)	5	TO INDOOR UNITS
⑥	Pipe cover (Gas)	5	TO INDOOR UNITS
⑦	Joint cover (Liquid)	3	
⑧	Joint cover (Gas)	3	
⑨	Band	24	

For drain pipe

	Accessory name	Q'ty	
⑩	Drain hose	1	Type A or Type B
⑪	Band	2	

4. Dimensions and required servicing space of branch box

Optional different (deformed) joints

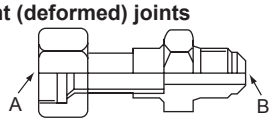


Fig. 4-1

Model name	Connected pipe diameter	Diameter A	Diameter B
	mm	mm	mm
MAC-A454JP	ø9.52 → ø12.7	ø9.52	ø12.7
MAC-A455JP	ø12.7 → ø9.52	ø12.7	ø9.52
MAC-A456JP	ø12.7 → ø15.88	ø12.7	ø15.88
PAC-493PI	ø6.35 → ø9.52	ø6.35	ø9.52
PAC-SG76RJ-E	ø9.52 → ø15.88	ø9.52	ø15.88

Optional Y-shaped connection pipe for P100 indoor unit

For use with PAC-AK52BC/PAC-AK53BC only

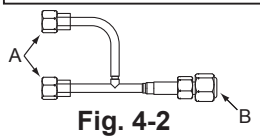


Fig. 4-2

Model name		Connected pipe diameter	Diameter A	Diameter B
		mm	mm	mm
PAC-AK52YP-E	Liquid	ø6.35 → ø9.52	ø6.35	ø9.52
	Gas	ø9.52 → ø15.88	ø9.52	ø15.88

■ **PAC-AK51BC/PAC-AK52BC/PAC-AK53BC (5-branch type)**

(mm)

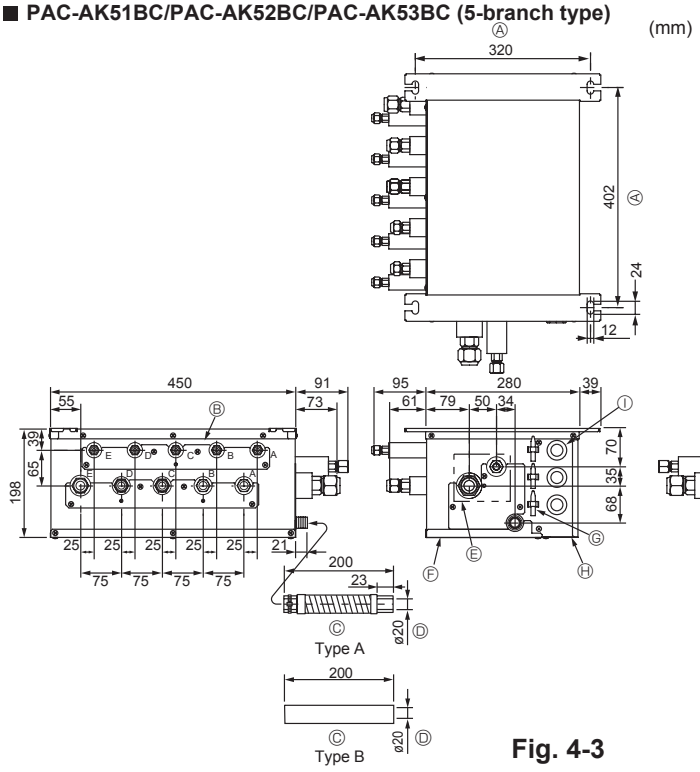


Fig. 4-3

* Please connect 2 indoor units or more with one system.
* 1-2 branch boxes may be connected to one outdoor unit.
* Suspension bolt : W3/8 (M10)
* Refrigerant pipe flared connection

*** The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size for indoor unit and branch box. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)**
*** When connecting P100 indoor unit(s), attach the optional Y-shaped connection pipe to the branch box. (The Y-shaped connection pipe is intended for use with PAC-AK52BC/PAC-AK53BC branch box only.)**

Ⓐ Suspension bolt pitch
Ⓑ To indoor unit
Ⓒ Flexible drain hose (Accessory)
Ⓓ Drain pipe connection (VP-16)
Ⓔ To outdoor unit
Ⓕ Service panel (for LEV, THERMISTOR)
Ⓖ 3-WIRE BAND
Ⓗ Electric cover
Ⓘ 3-electric wire inlet
Ⓙ Terminal block (to indoor unit)
Ⓚ Terminal block (to outdoor unit)

* Ensure that the branch box is installed as shown on the below drawing. Leg must be located on top. Otherwise drainage will not be properly performed.

■ **PAC-AK51BC/PAC-AK52BC/PAC-AK53BC (Fig.4-3)**

Suspension bolt: W3/8 (M10)
Refrigerant pipe flared connection

	A	B	C	D	E	To outdoor unit
Liquid pipe	ø6.35	ø6.35	ø6.35	ø6.35	ø6.35	ø9.52
Gas pipe	ø9.52	ø9.52	ø9.52	ø9.52	ø12.7	ø15.88

Drain hose size : O.D. 20 (VP16)
Conversion formula

1/4 F	ø6.35
3/8 F	ø9.52
1/2 F	ø12.7
5/8 F	ø15.88
3/4 F	ø19.05

4. Dimensions and Required Servicing Space of Branch Box

■ **PAC-AK31BC/PAC-AK32BC (3-branch type)**

(mm)

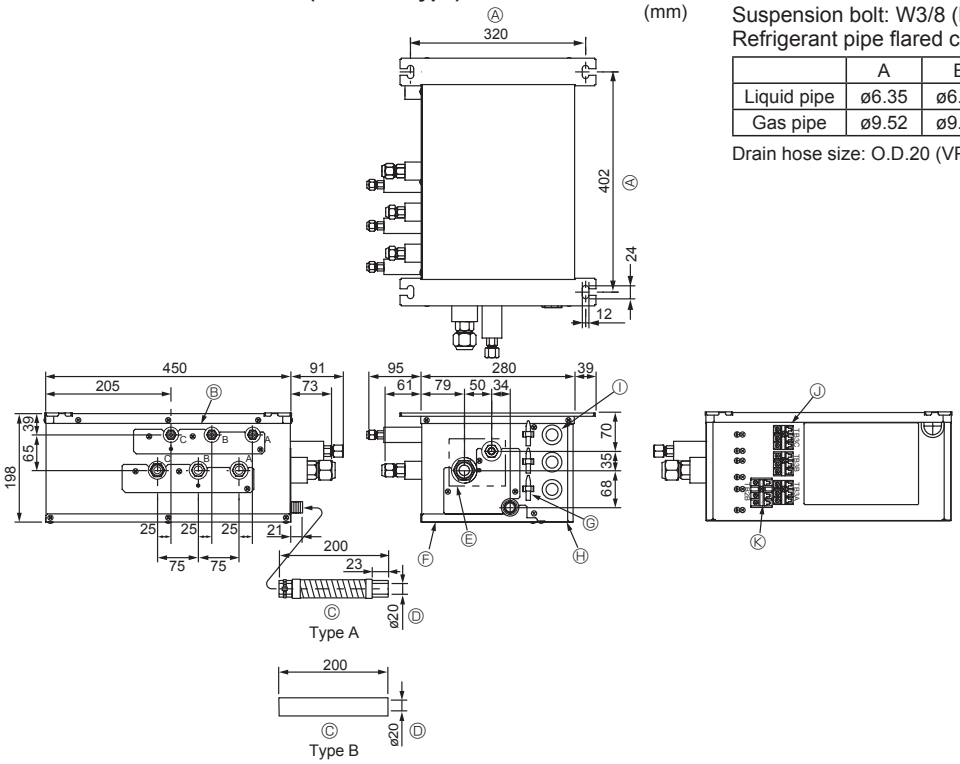


Fig. 4-4

■ **PAC-AK31BC/PAC-AK32BC (Fig.4-4)**

Suspension bolt: W3/8 (M10)

Refrigerant pipe flared connection

	A	B	C			To outdoor unit
Liquid pipe	ø6.35	ø6.35	ø6.35			ø9.52
Gas pipe	ø9.52	ø9.52	ø9.52			ø15.88

Drain hose size: O.D.20 (VP16)

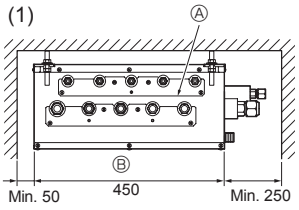


Fig. 4-5

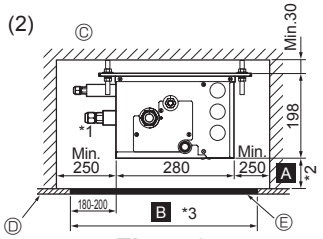


Fig. 4-6

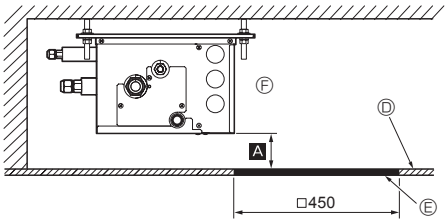


Fig. 4-7

(3)

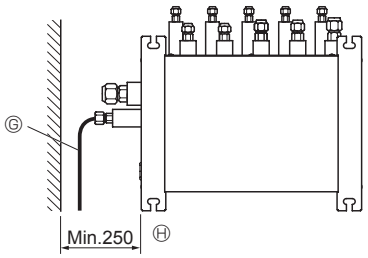


Fig. 4-8

4.1. Space required for installation and servicing

(1) Front View (Fig. 4-5)
- Ⓐ Branch box
- Ⓑ On the side of piping

(2) Side View (Fig. 4-6, Fig. 4-7)
- Ⓒ For indoor installations
- Ⓓ Ceiling board
- Ⓔ Maintenance hole
- Ⓕ PCB side

*1: A minimum 350 mm is required for 90° bends in refrigerant piping.

Note:
When using the PAC-AK52BC/PAC-AK53BC branch box to connect P100 indoor unit(s), the following procedure is required.
1. Connect the Y-shaped connection pipe end(s) to the indoor unit(s).
2. Mount the branch box.
3. Connect the Y-shaped connection pipe ends to the branch box.

***2: A is " Min. 200 mm " <recommendation>.**
(Premise: The slope of drain piping is securable 1/100 or more. Required 200 mm or more, when not securable.)

In the case of less than 200 mm (for example A is 100 mm), the exchange work of Branch box from a maintenance hole becomes difficult (Only exchange work of a PCB, linear expansion valve coils, sensors and drain pan is possible).

***3: B is " □ 600 mm " <recommendation>.**

In the case of " 450", prepare a maintenance hole at a PCB side (as it is shown in Fig. 4-7), and "Min. 300 mm" is needed as distance A .
In the case of less than 300 mm (for example A is 100 mm), the exchange work of Branch box, linear expansion valve coils, sensors, and drain pan from a maintenance hole becomes difficult (Only exchange work of a PCB is possible).

(3) Top View (Fig. 4-8)
- Ⓖ Refrigerant piping
- Ⓗ When facing in the opposite direction to the refrigerant piping.

5. Refrigerant piping

*** Always follow the specifications written in the installation manual of the outdoor unit. Exceeding these requirements may cause reduced performance of the equipment, and malfunctions.**

6. Mounting the Branch Box

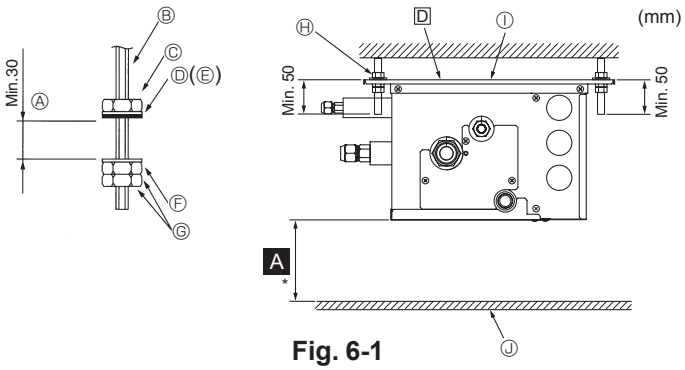
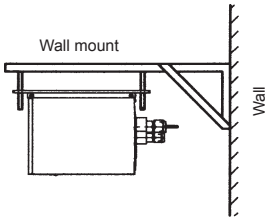


Fig. 6-1



* Purchase an appropriate bracket locally if the unit is to be mounted on a wall.

Fig. 6-2

(1) Install the suspension bolts (procure locally) at the specified pitch (Fig. 4-3, 4-4).
(2) Fit the washers and nuts (①, ②, procure locally) to the suspension bolts. (Fig. 6-1)
(3) Hang the unit on the suspension bolts.

Note:

When using PAC-AK52BC/PAC-AK53BC to connect P100 indoor unit(s), ensure that the Y-shaped connection pipe(s) is(are) connected to the indoor unit(s) before mounting the branch box.

(4) Fully tighten the nuts (check ceiling height).
(5) Use a level to adjust the branch box to the horizontal.

Ⓐ When unit is hung and nuts tightened
Ⓑ Suspension bolt
Ⓒ Nuts
Ⓓ Washer (with cushion) ①
Ⓔ Ensure that cushion faces downwards
Ⓕ Washer (without cushion) ②
Ⓖ Nut (procure locally)
Ⓗ Suspension bolt
Ⓘ Ensure that this face is always installed upwards.
Ⓙ Ceiling board.

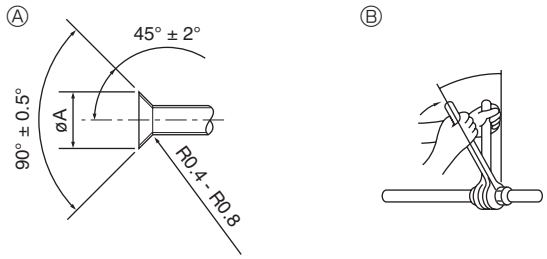
Note:

*** Refer to "4-1".**

⚠ Caution:

- **Always install the unit horizontally.**
- **This unit may be installed suspended from the ceiling.**
- **This unit may only be installed vertically, as shown in the diagram below. (Side D is facing up.)**
- **Incorrect installation may result in the drain overflowing.**

7. Installing refrigerant piping



Ⓐ Flare cutting dimensions
Ⓑ Flare nut tightening torque

Fig. 7-1

► Connect the liquid and gas pipes of each indoor unit to the same end connection numbers as indicated on the indoor unit flare connection section of each Branch Box. If connected to wrong end connection numbers, it doesn't work normally. (Fig. 7-1)
► When connecting indoor units, make sure to connect refrigerant pipes and connection wires to the appropriate connection ports marked with matching alphabets. (Ex. A, B, C, D, E)
► When connecting P100 indoor unit(s) by using PAC-AK52BC/PAC-AK53BC, use Y-shaped connection pipe(s) and perform the following piping. (Fig. 7-2)
When a single P100 indoor unit is wired to TB3A, connect the Y-shaped connection pipe ends to Port A + B.
When two P100 indoor units are wired to TB3A and TB3C respectively, connect the Y-shaped connection pipe ends to Port A + B and Port C + D.
For details, refer to the installation manual of the Y-shape connection pipe (PAC-AK52YP-E).

Note:

Be sure to mark all the local refrigerant piping (liquid pipes, gas pipes, etc.) for each indoor unit designating clearly which room it belongs in. (Ex. A, B, C, D, E)

► List indoor unit model names in the name plate on the control box of Branch Box (for identification purposes).

Ⓐ Flare cutting dimensions

Table 1

Copper pipe O.D. (mm)	Flare dimensions øA dimensions (mm)
ø6.35	8.7 - 9.1
ø9.52	12.8 - 13.2
ø12.7	16.2 - 16.6
ø15.88	19.3 - 19.7

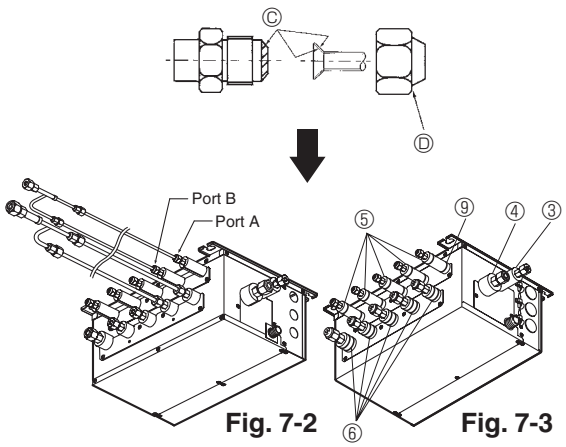


Fig. 7-2 Fig. 7-3

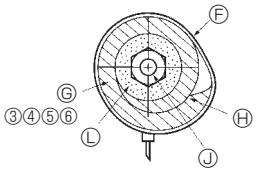


Fig. 7-4

► To prevent water dripping from the refrigerant piping, install sufficient thermal insulation.
► When using commercially available refrigerant piping, ensure that both liquid and gas piping are wrapped with commercially available thermal insulation materials (insulation materials at least 15 mm thick and able to withstand temperatures in excess of 120 °C).
► Refer to the installation manual of the outdoor unit when creating a vacuum and opening or closing valves.

(1) Remove the flared nuts and caps from the branch box.
(2) Flare the ends of the liquid and gas piping, and apply refrigeration oil (procure locally) to the flared seat.
(3) Connect the refrigerant piping immediately. Always tighten the flared nuts to the torque specified in the table below using a torque wrench and double spanner.
(4) Press the pipe covers ③ and ⑤ on the liquid piping against the unit and wrap to hold in place.
(5) Press the pipe covers ④ and ⑥ on the gas piping against the unit and wrap to hold in place.
(6) Apply the supplied bands ⑨ at a position 10 - 20 mm from each end of the pipe covers (③④⑤⑥).
(7) If the indoor unit is not connected, fit the supplied pipe covers (with caps, ⑦ and ⑧) to the branch box refrigerant piping connections to prevent condensation dripping from the pipes.
(8) Clamp the pipe covers (⑦⑧) in place with the supplied bands ⑨.

Ⓑ Flare nut tightening torque

Table 2

Copper pipe O.D. (mm)	Flare nut O.D. (mm)	Tightening torque (N·m)*
ø6.35	17	14 - 18
ø6.35	22	34 - 42
ø9.52	22	34 - 42
ø9.52	26	49 - 61
ø12.7	26	49 - 61
ø12.7	29	68 - 82
ø15.88	29	68 - 82
ø15.88	36	100 - 120

* 1N·m ≒ 10 kgf·cm

7. Installing refrigerant piping

(mm)

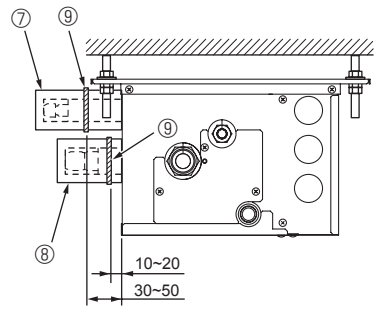


Fig. 7-5

⚠ Caution:
Tighten the flare nut with a torque wrench in the specified method.
Overtightening will cause the flare nut to crack and it will cause refrigerant leakage over a period of time.

Ⓒ Apply refrigeration oil to the entire (Fig. 7-3) surface of the flared seat.
Ⓓ Basically use flared nuts fitted to the body (commercially available flared nuts may crack).

Note:
A special flare nut (optional or attached to the indoor unit) is needed to some indoor units.
Please refer to the installation manual of outdoor unit and indoor unit for details.

Ⓔ Section of connection (Fig. 7-4)
Ⓕ Band ⑨
Ⓖ Pipe covers ③④⑤⑥
Ⓗ Tighten
Ⓙ Refrigerant piping
Ⓛ Thermal insulation for refrigerant piping

► Use the following procedures for indoor connection part which indoor unit is not connected. (Fig. 7-5)

(1) In order to prevent refrigerant leaks, make sure that the flare nuts are tightened according to the specified torques* in Table 3.
* Refrigerant may also leak if the flare nuts are tightened more than the specified torques.
(2) In order to prevent condensation, install the pipe covers ⑦ ⑧ and fasten them with the supplied bands ⑨ .

Table 3

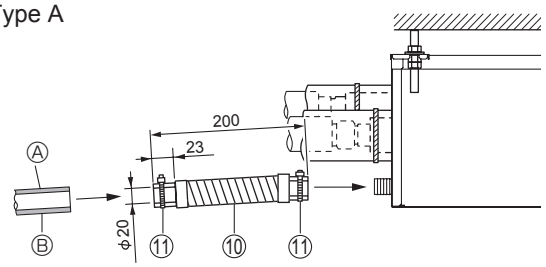
Diameters of branch box openings for connecting indoor units (mm)	Tightening torque (N·m)
ø6.35	13 ± 2
ø9.52	30 ± 2
ø12.7	50 ± 2

► Refrigerant charge:
Refer to the installation manual of the outdoor unit.
Use only R410A refrigerant (use of other refrigerants may cause troubles).

8. Installing drain piping

(mm)

Type A



Type B

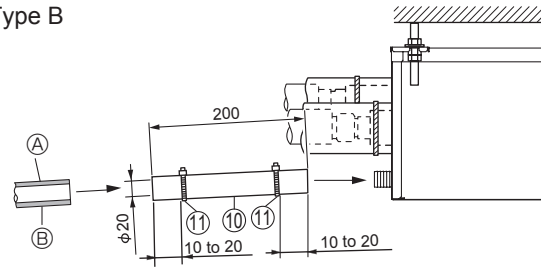


Fig. 8-1

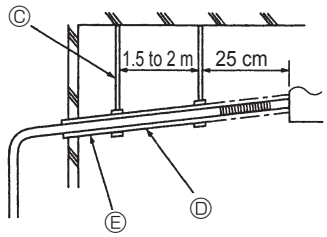


Fig. 8-2

• To ensure that the drain piping has a down-gradient (greater than 1/100), do not make traps or humps in piping.

• Install thermal insulation to prevent condensation dripping.
• Ensure that the horizontal length (not diagonal length) of drain piping does not exceed 20 m. If the drain piping extends over a significant distance, install supports to ensure that the piping does not sag. Do not fit air bleed pipes under any circumstances (water may exit from air bleed pipes).
• Do not fit odor traps at drain piping outlets.
• Install drain outlets in locations where odors will not present problems.
• Do not place drain piping directly in drains which may contain sulfurous gases.
• Drain piping may be installed in any direction provided the above requirements are followed.
• Keep bends of attached drain hose to a maximum of 45°.
(1) Apply PVC adhesive (procure locally) to the drain connection on the branch box and push the attached drain hose ⑩ onto the connection as far as it will go. (Fig. 8-1)
(2) Insert a hard PVC pipe (VP-16, procure locally) into the attached drain hose ⑩ and glue it together and fix it. (Fig. 8-1)
Ⓐ VP-16 procured locally
Ⓑ Thermal insulation
(3) Fit a band ⑪ to the attached drain hose ⑩ (Fig.8-1)
(4) Ensure that the drain piping down-gradient is greater than 1/100. (Fig. 8-2)
Ⓒ Supports
Ⓓ Down-gradient greater than 1/100.
Ⓔ Thermal insulation

Note:
The drain hose is available in either Type A or Type B.
The installation methods are different between Type A and Type B.

9. Electrical work

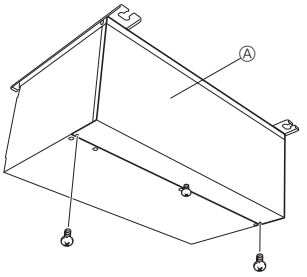


Fig. 9-1

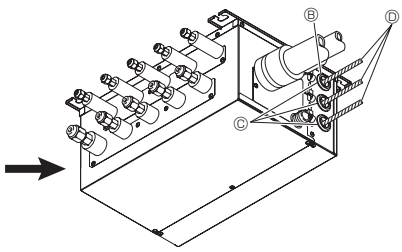


Fig. 9-2

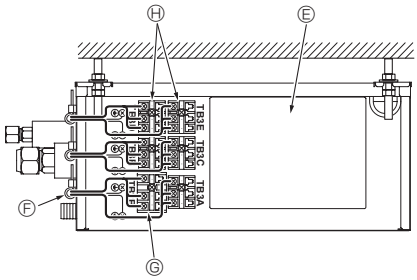


Fig. 9-3

► **Cautions for electrical work.**

⚠ **Warning:**

- **Always use dedicated circuits with breakers, and at the rated voltage. Power supply circuits with insufficient capacity, and bad workmanship during installation, may result in electric shock or fire.**
- **Always ensure that electrical wiring inlets are sealed when the branch box is installed outdoors. Rainwater on the terminal blocks may result in fire or malfunction.**

⚠ **Caution:**

- **Be sure to establish an earth. Do not earth the unit to a utility pipe, arrester, or telephone earth.** ⏚
  Incomplete earth may cause electrical shock. A high surge current from lightning or other sources may cause damage to the air conditioner.
- **Use the specified electrical wiring and ensure that it is connected properly, and that it is not under tension. Failure to follow these requirements may result in broken wiring, heating, or fire.**

► **Wiring connecting branch box and outdoor unit, and branch box and indoor units, functions as both power supply and signal cable. Connect this wiring in accordance with the terminal block numbers to ensure correct polarity.**

► **Ensure that the appropriate refrigerant piping and electrical wiring are connected to each indoor unit. Incorrect wiring will interfere with the correct operation of the unit.**

► Connect refrigerant pipes and connection wires to the appropriate ports marked with matching alphabets (Ex. A, B, C, D, E) on this unit.

► **Always fix each ground wire separately with a ground screw.**

► **To prevent that wiring installed in the ceiling is chewed by rats etc., it should be installed in wiring conduit.**

1. Remove the screws in the cover. (Fig. 9-1)
2. Remove the cover.
3. Pass the wiring into the branch box. (Fig. 9-2)
4. Fix each wire in place with a wiring clamp. (Fig. 9-3)
5. Firmly connect each wire to the appropriate terminal block. (Fig. 9-3)
6. Replace the cover.
7. When the branch box is installed outdoors, ensure that the wiring inlets are sealed with putty to prevent entry of rainwater. (Fig. 9-2)

Ⓐ Electric cover
Ⓑ 3-Bush
Ⓒ Seal
Ⓓ Wiring
Ⓔ BC controller
Ⓕ Band
Ⓖ Terminal block: TB2B <To outdoor unit>
Ⓗ Terminal block: TB3A-TB3E <To indoor unit>

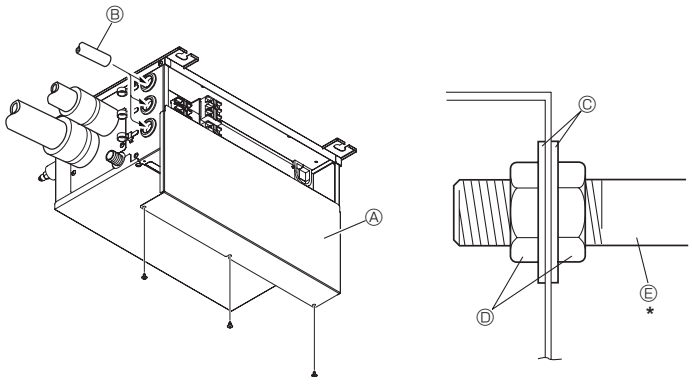


Fig. 9-4

9.1. When using wiring conduit (Fig. 9-4)

Replace the horizontal cover when the wiring conduit has been fixed in place.

Ⓐ Cover
Ⓑ Wiring conduit
Ⓒ Washer
Ⓓ Nut
Ⓔ Wiring conduit

Wiring conduit of up to 1" OD may be used.

(1) When using 1" OD wiring conduit, remove the bush and fix to the branch box. Remove the horizontal cover while fixing to the branch box.

(2) When using wiring conduit of 3/4" OD or smaller, notch the bush and insert the wiring conduit approximately 100 mm into the branch box.

* Replace the horizontal cover when the wiring conduit has been fixed in place.

<Example 1>
(in case of 2-branch boxes)

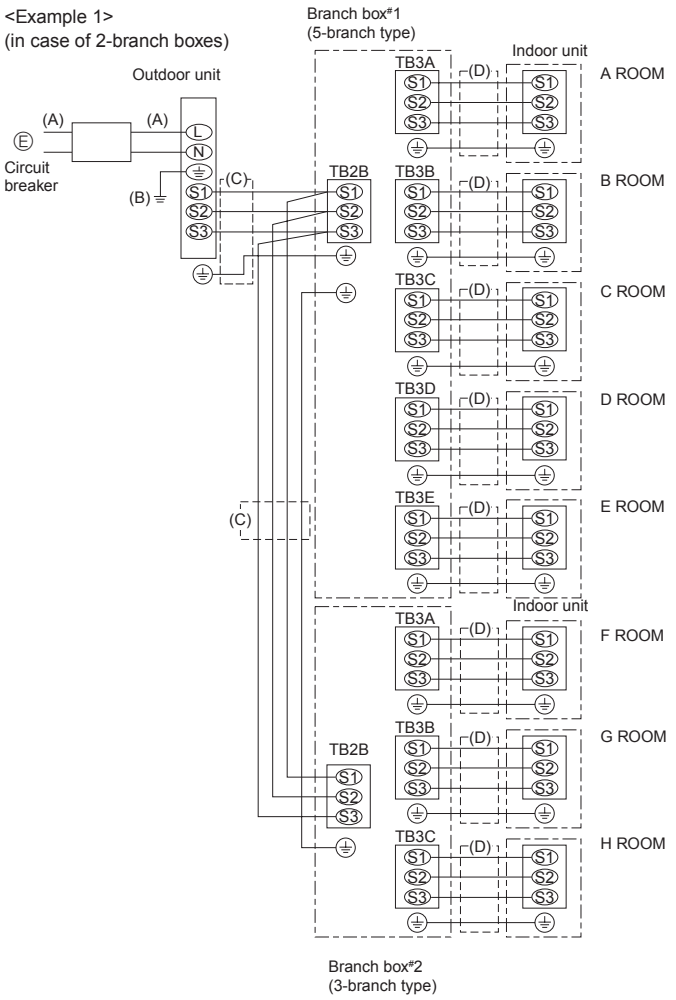


Fig. 9-5

<Example2>
(in case of wiring to P100 indoor unit(s))

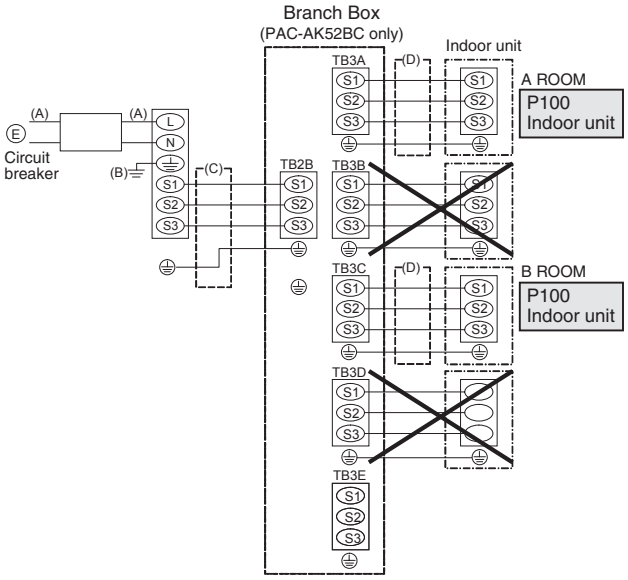


Fig. 9-6

9.2. External wiring procedure (Fig. 9-5)

Ⓔ Power supply: Single phase 220/230/240 V, 50 Hz 220 V, 60 Hz

Note:

① **Power supply input: Outdoor unit only. Connect the lines (C), (D) in accordance with the terminal block names to ensure correct polarity.**

② **As for lines (C), S1 and S2 are for connecting the power source. And S2 and S3 are for signals. S2 is a common cable for the power source and signal.**

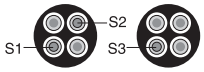
Wire diameter				Breaker	
(A) Main power line	(B) Earth line	(C) Signal line/ Earth line	(D) Signal line/ Earth line	Interrupting current	Performance characteristic
6.0 mm²	6.0 mm²	1.5 mm² *2/ Min. 1.5 mm²	1.5 mm²/ Min. 1.5 mm²	*1	*1

When using twisted wire for the wiring, the use of round terminal is required.

*1 Refer to the installation manual of the outdoor unit.

*2 If 1.5 mm² used, Max. 45 m (“Outdoor unit - Branch box #1” plus “Branch box #1 - Branch box #2”). If 2.5 mm² used, Max. 55 m

(When connecting indoor unit of PEAD series)
If 1.5 mm² used, Max. 30 m (“Outdoor unit - Branch box #1” plus “Branch box #1 - Branch box #2”).
If 2.5 mm² used, Max. 50 m
If 3.5 mm² used, and S3 separated, Max. 55 m
Use one cable for S1 and S2 and another for S3 as shown in the picture.



Notes: 1. Wiring size must comply with the applicable local and national code.
2. Power supply cords and Indoor unit/Branch box/Outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)
3. Install an earth line longer than power cables.

9.3. Wiring to P100 indoor units (Fig. 9-6)

- When wiring P100 indoor unit(s), only use PAC-AK52BC/PAC-AK53BC branch box.
- When wiring a single P100 indoor unit, use TB3A.

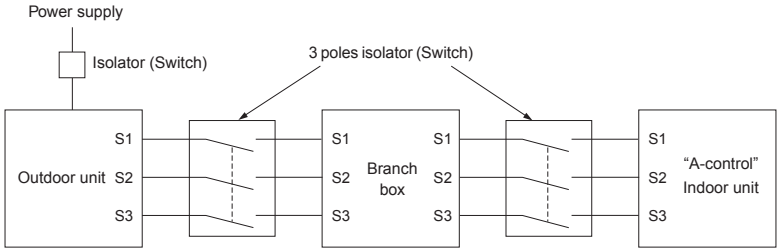
Notes:
• When wiring a single P100 indoor unit, ONLY use TB3A. If a single P100 indoor unit is wired to the other terminal block, an alarm will be activated, and the indoor unit will not operate.
• When a single P100 indoor unit is wired to TB3A, do not wire any indoor unit to TB3B. Otherwise, an alarm will be activated, and the indoor unit will not operate.
• TB3C, TB3D, and TB3E are available for wiring of indoor units that are not P100.

- When wiring two P100 indoor units, use TB3A and TB3C.

Notes:
• When wiring two P100 indoor units, ONLY use TB3A and TB3C. If two P100 indoor units are wired to the other terminal blocks, an alarm will be activated, and the indoor units will not operate.
• When two P100 indoor units are wired to TB3A and TB3C respectively, do not wire any indoor unit to TB3B or TB3D. Otherwise, an alarm will be activated, and the indoor unit will not operate.

9. Electrical work

⚠ **Warning:**
In case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between outdoor unit and branch box/indoor unit and branch box, please use 3-poles type.

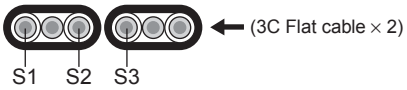


⚠ **Caution:**
After using the isolator, be sure to turn off and on the main power supply to reset the system. Otherwise, the outdoor unit may not be able to detect the branch box(es) or indoor units.

WIRING SPECIFICATIONS
(OUTDOOR-BRANCH BOX CONNECTING CABLE)

Cross section of cable	Wire size (mm²)	Number of wires	Polarity	L (m)*6	
				Other	When PEAD-series units are included
Round	2.5	3	Clockwise : S1-S2-S3 * Pay attention to stripe of yellow and green	(50) *2	(50) *2
Flat	2.5	3	Not applicable (Because center wire has no cover finish)	Not applicable *5	Not applicable *5
Flat	1.5	4	From left to right : S1-Open-S2-S3	(45) *3	(30) *3
Round	2.5	4	Clockwise : S1-S2-S3-Open *Connect S1 and S3 to the opposite angle	(55) *4	(50) *4

*1 :Power supply cords of appliances shall not be lighter than design 60245 IEC or 60227 IEC.
*2 : In case that cable with stripe of yellow and green is available.
*3 : In case of regular polarity connection (S1-S2-S3), wire size is 1.5 mm².
*4 : In case of regular polarity connection (S1-S2-S3).
*5 : In the flat cables are connected as this picture, they can be used up to 55 m. When connecting indoor unit of PEAD series, they can be used up to 50 m.



*6 : Mentioned cable length is just a reference value.
It may be different depending on the condition of installation, Humidity or materials, etc.

Be sure to connect the outdoor-branch box/indoor-branch box connecting cables directly to the units (no intermediate connections).
Intermediate connections can lead to communication errors if water enters the cables and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point.

10. Test run

- Refer to the "Test run" section of the installation manual of the indoor units and outdoor unit.
- When installation of the indoor unit, branch box, and outdoor unit is complete, begin test run to check for water leaks in the branch box.

- **After power is supplied or after an operation stop for a while, a small clicking noise may be heard from the inside of the branch box. The electronic expansion valve is opening and closing. The unit is not faulty.**

- Be sure to perform the test run for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
- If you perform the test run for all indoor units at once, you cannot detect any erroneous connection, if any, of the refrigerant pipes and the indoor/outdoor unit connecting wires.

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

- Low Voltage Directive 2006 / 95 / EC
- Electromagnetic Compatibility Directive 2004 /108 / EC

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

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